

SEQUENCE LISTING

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Lysaght, Michael J

<120> Systems and Methods Related to Degradation of Uremic Toxins

<130> B0877.70025US00

<160> 3

<170> PatentIn version 3.2

<210> 1

<211> 840

<212> PRT

<213> Canavalia ensiformis

<400> 1

Met Lys Leu Ser Pro Arg Glu Val Glu Lys Leu Gly Leu His Asn Ala
1 5 10 15

Gly Tyr Leu Ala Gln Lys Arg Leu Ala Arg Gly Val Arg Leu Asn Tyr
20 25 30

Thr Glu Ala Val Ala Leu Ile Ala Ser Gln Ile Met Glu Tyr Ala Arg
35 40 45

Asp Gly Glu Lys Thr Val Ala Gln Leu Met Cys Leu Gly Gln His Leu
50 55 60

Leu Gly Arg Arg Gln Val Leu Pro Ala Val Pro His Leu Leu Asn Ala
65 70 75 80

Val Gln Val Glu Ala Thr Phe Pro Asp Gly Thr Lys Leu Val Thr Val
85 90 95

His Asp Pro Ile Ser Arg Glu Asn Gly Glu Leu Gln Glu Ala Leu Phe
100 105 110

Gly Ser Leu Leu Pro Val Pro Ser Leu Asp Lys Phe Ala Glu Thr Lys
115 120 125

Glu Asp Asn Arg Ile Pro Gly Glu Ile Leu Cys Glu Asp Glu Cys Leu
130 135 140

Thr Leu Asn Ile Gly Arg Lys Ala Val Ile Leu Lys Val Thr Ser Lys
145 150 155 160

Gly Asp Arg Pro Ile Gln Val Gly Ser His Tyr His Phe Ile Glu Val
165 170 175

Asn Pro Tyr Leu Thr Phe Asp Arg Arg Lys Ala Tyr Gly Met Arg Leu
180 185 190

Asn Ile Ala Ala Gly Thr Ala Val Arg Phe Glu Pro Gly Asp Cys Lys
195 200 205

Ser Val Thr Leu Val Ser Ile Glu Gly Asn Lys Val Ile Arg Gly Gly
210 215 220

Asn Ala Ile Ala Asp Gly Pro Val Asn Glu Thr Asn Leu Glu Ala Ala
225 230 235 240

Met His Ala Val Arg Ser Lys Gly Phe Gly His Glu Glu Glu Lys Asp
245 250 255

Ala Ser Glu Gly Phe Thr Lys Glu Asp Pro Asn Cys Pro Phe Asn Thr
260 265 270

Phe Ile His Arg Lys Glu Tyr Ala Asn Lys Tyr Gly Pro Thr Thr Gly
275 280 285

Asp Lys Ile Arg Leu Gly Asp Thr Asn Leu Leu Ala Glu Ile Glu Lys
290 295 300

Asp Tyr Ala Leu Tyr Gly Asp Glu Cys Val Phe Gly Gly Gly Lys Val
305 310 315 320

Ile Arg Asp Gly Met Gly Gln Ser Cys Gly His Pro Pro Ala Ile Ser
325 330 335

Leu Asp Thr Val Ile Thr Asn Ala Val Ile Ile Asp Tyr Thr Gly Ile
340 345 350

Ile Lys Ala Asp Ile Gly Ile Lys Asp Gly Leu Ile Ala Ser Ile Gly
355 360 365

Lys Ala Gly Asn Pro Asp Ile Met Asn Gly Val Phe Ser Asn Met Ile
370 375 380

Ile Gly Ala Asn Thr Glu Val Ile Ala Gly Glu Gly Leu Ile Val Thr

385		390		395		400
Ala Gly Ala Ile Asp Cys His Val His Tyr Ile Cys Pro Gln Leu Val						
		405		410		415
Tyr Glu Ala Ile Ser Ser Gly Ile Thr Thr Leu Val Gly Gly Gly Thr						
		420		425		430
Gly Pro Ala Ala Gly Thr Arg Ala Thr Thr Cys Thr Pro Ser Pro Thr						
		435		440		445
Gln Met Arg Leu Met Leu Gln Ser Thr Asp Asp Leu Pro Leu Asn Phe						
		450		455		460
Gly Phe Thr Gly Lys Gly Ser Ser Ser Lys Pro Asp Glu Leu His Glu						
		465		470		475
						480
Ile Ile Lys Ala Gly Ala Met Gly Leu Lys Leu His Glu Asp Trp Gly						
		485		490		495
Ser Thr Pro Ala Ala Ile Asp Asn Cys Leu Thr Ile Ala Glu His His						
		500		505		510
Asp Ile Gln Ile Asn Ile His Thr Asp Thr Leu Asn Glu Ala Gly Phe						
		515		520		525
Val Glu His Ser Ile Ala Ala Phe Lys Gly Arg Thr Ile His Thr Tyr						
		530		535		540
His Ser Glu Gly Ala Gly Gly Gly His Ala Pro Asp Ile Ile Lys Val						
		545		550		555
						560
Cys Gly Ile Lys Asn Val Leu Pro Ser Ser Thr Asn Pro Thr Arg Pro						
		565		570		575
Leu Thr Ser Asn Thr Ile Asp Glu His Leu Asp Met Leu Met Val Cys						
		580		585		590
His His Leu Asp Arg Glu Ile Pro Glu Asp Leu Ala Phe Ala His Ser						
		595		600		605
Arg Ile Arg Lys Lys Thr Ile Ala Ala Glu Asp Val Leu Asn Asp Ile						
		610		615		620

Gly Ala Ile Ser Ile Ile Ser Ser Asp Ser Gln Ala Met Gly Arg Val
625 630 635 640

Gly Glu Val Ile Ser Arg Thr Trp Gln Thr Ala Asp Lys Met Lys Ala
645 650 655

Gln Thr Gly Pro Leu Lys Cys Asp Ser Ser Asp Asn Asp Asn Phe Arg
660 665 670

Ile Arg Arg Tyr Ile Ala Lys Tyr Thr Ile Asn Pro Ala Ile Ala Asn
675 680 685

Gly Phe Ser Gln Tyr Val Gly Ser Val Glu Val Gly Lys Leu Ala Asp
690 695 700

Leu Val Met Trp Lys Pro Ser Phe Phe Gly Thr Lys Pro Glu Met Val
705 710 715 720

Ile Lys Gly Gly Met Val Ala Trp Ala Asp Ile Gly Asp Pro Asn Ala
725 730 735

Ser Ile Pro Thr Pro Glu Pro Val Lys Met Arg Pro Met Tyr Gly Thr
740 745 750

Leu Gly Lys Ala Gly Gly Ala Leu Ser Ile Ala Phe Val Ser Lys Ala
755 760 765

Ala Leu Asp Gln Arg Val Asn Val Leu Tyr Gly Leu Asn Lys Arg Val
770 775 780

Glu Ala Val Ser Asn Val Arg Lys Leu Thr Lys Leu Asp Met Lys Leu
785 790 795 800

Asn Asp Ala Leu Pro Glu Ile Thr Val Asp Pro Glu Ser Tyr Thr Val
805 810 815

Lys Ala Asp Gly Lys Leu Leu Cys Val Ser Glu Ala Thr Thr Val Pro
820 825 830

Leu Ser Arg Asn Tyr Phe Leu Phe
835 840

<210> 2
<211> 296
<212> PRT

<213> Schizosaccharomyces pombe

<400> 2

Met Ser Glu Thr Thr Tyr Val Lys Gln Cys Ala Tyr Gly Lys Thr Leu
1 5 10 15

Val Arg Phe Met Lys Lys Asp Ile Cys Pro Lys Thr Lys Thr His Thr
20 25 30

Val Tyr Glu Met Asp Val Gln Ser Leu Leu Thr Gly Glu Leu Glu Glu
35 40 45

Ser Tyr Thr Lys Ala Asp Asn Ser Ile Val Val Pro Thr Asp Thr Gln
50 55 60

Lys Asn Thr Ile Tyr Val Phe Ala Lys Asn Asn Asp Val Ser Val Pro
65 70 75 80

Glu Val Phe Ala Ala Lys Leu Ala Lys His Phe Val Asp Lys Tyr Lys
85 90 95

His Ile His Gly Ala Ala Leu Asp Ile Thr Ile Thr Pro Trp Thr Arg
100 105 110

Met Glu Val Gln Gly Lys Pro His Ser His Ser Phe Ile Arg Asn Pro
115 120 125

Gly Glu Thr Arg Lys Thr His Val Val Phe Ser Glu Gly Lys Gly Phe
130 135 140

Asp Val Val Ser Ser Leu Lys Asp Val Leu Val Leu Lys Ser Thr Gly
145 150 155 160

Ser Gly Phe Thr Asn Phe His Lys Cys Glu Phe Thr Thr Leu Pro Glu
165 170 175

Val Thr Asp Arg Ile Phe Ser Thr Ser Ile Asp Cys Asn Tyr Thr Phe
180 185 190

Lys His Phe Asp Thr Phe Glu Glu Leu Ala Gly Phe Asp Phe Asn Ser
195 200 205

Ile Tyr Glu Lys Val Lys Glu Ile Thr Leu Glu Thr Phe Ala Leu Asp
210 215 220

Asp Ser Glu Ser Val Gln Ala Thr Met Tyr Lys Met Ala Asp Thr Ile
225 230 235 240

Ile Asn Thr Tyr Pro Ala Ile Asn Glu Val Tyr Tyr Ala Leu Pro Asn
245 250 255

Lys His Tyr Phe Glu Ile Asn Leu Ala Pro Phe Asn Ile Asp Asn Leu
260 265 270

Gly Ser Asn Cys Ser Leu Tyr Gln Pro Gln Ala Tyr Pro Ser Gly Tyr
275 280 285

Ile Thr Cys Thr Val Ala Arg Lys
290 295

<210> 3
<211> 258
<212> PRT
<213> Arthrobacter sp.

<400> 3

Met Lys His Leu Ile Ser Asn Met Thr Trp Asn Glu Tyr Gln Asp Lys
1 5 10 15

Val Asp Lys Gly Phe Leu Ile Leu Pro Val Gly Ser Thr Glu Gln His
20 25 30

Gly Pro His Leu Pro Leu Gly Val Asp Ala Val Ile Ser Thr Gln Phe
35 40 45

Ser Leu Ala Ile Ala Arg Glu Leu Asn Ala Ala Val Ala Pro Val Leu
50 55 60

Ser Tyr Gly Tyr Lys Ser Leu Pro Ala Ser Gly Gly Gly Pro Met Phe
65 70 75 80

Pro Gly Thr Ile Asp Leu Lys Gly Ser Thr Leu Thr Ser Leu Val Tyr
85 90 95

Asp Leu Leu Glu Glu Phe Ile Ala Asp Gly Trp Lys Lys Ile Leu Ile
100 105 110

Phe Ser Ala His Phe Glu Asn Glu Ala Phe Leu Ser Glu Ala Cys Asp
115 120 125

Leu Leu Leu Arg Asn Gln Lys Glu Glu Phe Pro Lys Val Leu Ile Cys
130 135 140

Asn Trp Trp Asp Asn Leu Ser Ala Glu Thr Met Ser Lys Val Phe Asp
145 150 155 160

Glu Val Arg Phe Pro Gly Trp Ala Leu Glu His Ala Ala Ile Ser Glu
165 170 175

Thr Ser Leu Met Met His Phe Ser Pro Glu Leu Val Lys Glu Asp Leu
180 185 190

Ile Thr Asp Glu Gly Val Asn Asn Pro Pro Thr Tyr Gln Ser Phe Pro
195 200 205

Pro Ser Lys Thr Leu Ile Pro Ala Ser Gly Cys Leu His Ser Ala Tyr
210 215 220

Ser Ser Ser Ala Glu Lys Gly Lys Leu Ile Ala Leu Asp Ala Thr Lys
225 230 235 240

Asn Ile Val Ser Phe Leu Ile Lys Glu Phe Ser Leu Glu Met Val Pro
245 250 255

Ile Glu